

*Amend*  
sccm O<sub>2</sub>, and 15 sccm C<sub>4</sub>F<sub>8</sub>. In Figure 2, a dielectric layer 6 having tapered openings 8 was obtained when the dielectric etch was carried out an oxide etch can be carried out for about 4 minutes in a single step with the chamber pressure set at about 30 mTorr, one or both of the electrodes powered with 1400 watts at 27 MHz and 1800 watts at 2 MHz, 500 sccm Ar, 13 sccm SO<sub>2</sub>, and 15 sccm C<sub>4</sub>F<sub>8</sub>. Figure 3 shows an example of a dielectric layer 10 having straight openings 12, the openings being etched in accordance with the process according to the invention.

---

**IN THE CLAIMS:**

A marked-up version of the claims showing insertions and deletions appears in Appendix B. Please rewrite Claims 1, 3, 6, 7 and 12 as follows:

---

1. (As Amended) 1. A method of etching openings in a dielectric layer with profile control, comprising:

*A2* supporting a semiconductor substrate in a plasma etch reactor, the substrate including a dielectric layer;

supplying an etchant gas to the plasma etch reactor; and

etching openings in the dielectric layer by energizing the etchant gas into a plasma state, the etchant gas comprising C<sub>x</sub>F<sub>y</sub>H<sub>z</sub> wherein x ≥ 1, y ≥ 1 and z ≥ 0, SO<sub>2</sub> gas and an oxygen-containing gas, the SO<sub>2</sub> gas and the oxygen-containing gas being added in amounts effective for profile control of the etched openings.

---

A3 3. (As amended) The method of Claim 1, wherein the  $C_xF_yH_z$  forms a protective sidewall polymer on sidewalls of the etched openings, the  $SO_2$  gas protects the sidewall polymer from excessive attack by the oxygen-containing gas and the oxygen-containing gas maintains a thickness of the sidewall polymer effective for profile control of the etched openings.

A4 6. (As Amended) The method of Claim 1, wherein the oxygen-containing gas is  $O_2$ , the  $SO_2$  and  $O_2$  being added in amounts effective to provide undissociated  $SO_2$  molecules which react with polymer at bottoms of the etched openings to prevent etch stop under bombardment of directional ions.

7. (As Amended) The method of Claim 1, wherein the ratio of flow rates of the  $SO_2$  gas to the oxygen-containing gas is 0.5:1 to 1.5:1.

A5 12. (As Amended) The method of Claim 1, wherein the oxygen-containing gas is  $O_2$ , each of the  $SO_2$  and  $O_2$  gases being supplied to the plasma etch reactor at a flow rate of 1 to 30 sccm.